

Overview of Aerospace Manufacturing Ecosystem

Welcoming Immigrant Women to Aerospace

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Overview of Aerospace Manufacturing Ecosystem

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To provide an introduction of the aerospace manufacturing ecosystem, visibility of opportunities and trends in the industry



Agenda

- 1 Importance of Canadian Aerospace
- 2 Canadian Aerospace Landscape
- 3 Components of Aerospace Manufacturing Ecosystem
- 4 Phases of the Aerospace Ecosystem
- 5 Trends Impacting Canadian Aerospace Industry



Importance of Canadian Aerospace

A Pillar of Innovation and Economic Growth

Economic Contribution
Technological Advancement
Research & Development
Defense & Security
Global Competitiveness





Canadian Aerospace Landscape

BOMBARDIER

Manufacturer of business jets

CAE

Manufacturer of simulation technologies and training services

 **Pratt & Whitney**
An RTX Business

Manufacturer of aircraft engines



Manufacturer of helicopters

 **SAFRAN**

Manufacturer of engines and landing gear

Honeywell
Aerospace

 **Collins Aerospace**

 **L3HARRIS™**

 **Celestica™**

 **MDA**

HÉROUX DEVTEK


MAGELLAN
AEROSPACE

FLYHT
INSIGHT • ACTION • CONTROL

Esterline

Avior

CMC
Electronics



Components of the Aerospace Manufacturing Ecosystem

Suppliers

Provide components, materials, system, and/or services required for manufacturing to support production & MRO requirements

- *Examples:* Engine manufacturers, avionics suppliers, composite material suppliers

Manufacturers

Design, develop, and produce aircraft, end-to-end from initial design and engineering to manufacturing and final assembly

- *Examples:* Bombardier, Bell Helicopter

Operators

Individual or company that operates or manages aircraft; responsible for activities such as flight planning, scheduling, maintenance oversight, crew management

- *Examples:* Air Canada, WestJet, Porter Airlines, NetJets

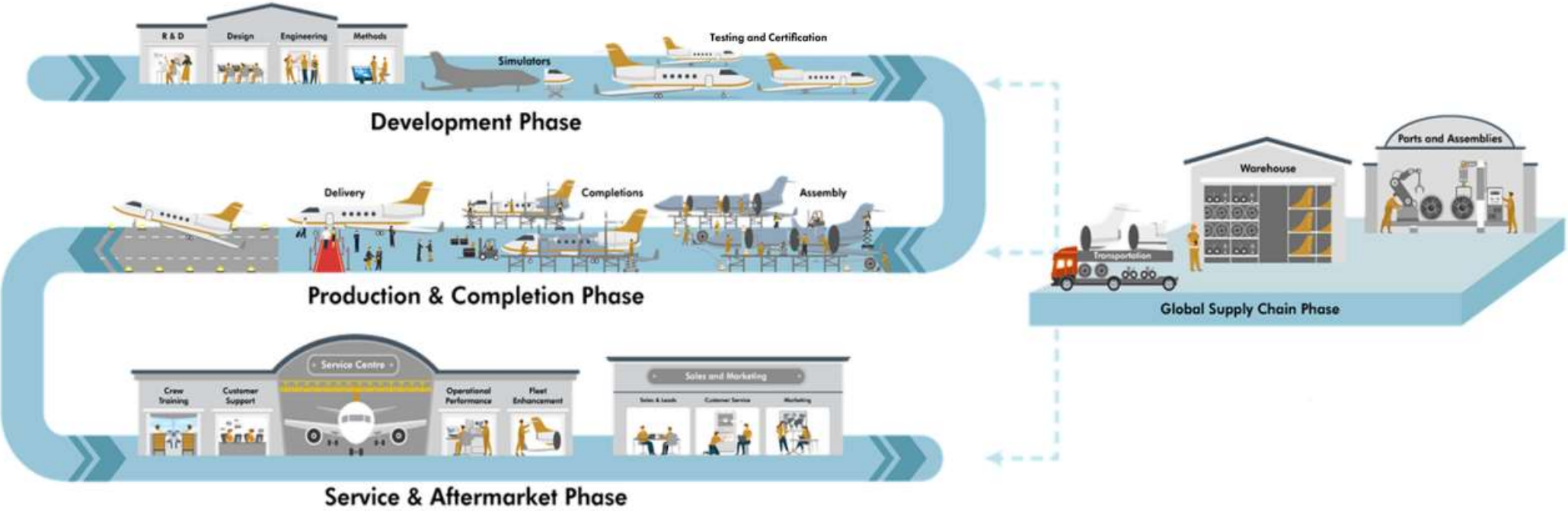
Maintenance, Repair, & Overhaul (MRO)

Activities involved in maintaining, repairing, and overhauling aircraft, engines, and related components to ensure safety, reliability, and longevity

- *Examples:* MRO facilities, independent service providers, airline maintenance divisions

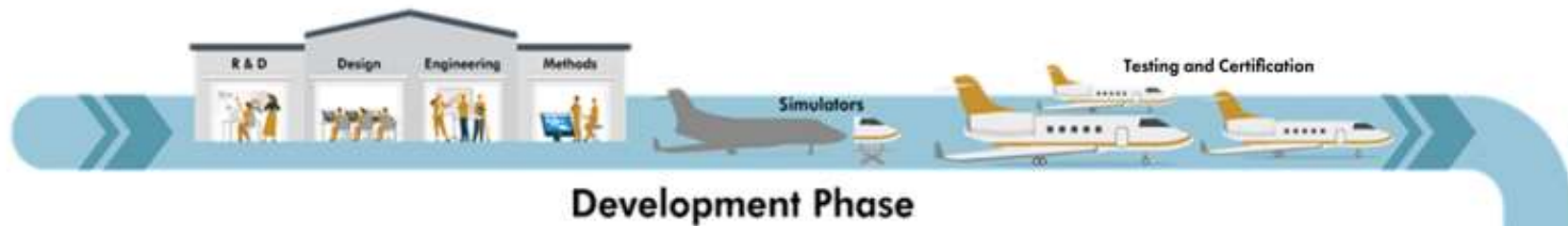


Phases of the Aerospace Ecosystem





Aerospace Ecosystem: Development



Research & Development (R&D): Exploration of new ideas and technologies in aerospace manufacturing.



Design: Creation of detailed blueprints for the aerospace product.



Engineering: Translating designs into feasible and producible products.



Methods: Selecting optimal manufacturing processes and assembly techniques.



Simulators: Simulation and validation of aerospace product performance.



Testing & Certification: Verifying safety and compliance through rigorous testing.



Aerospace Ecosystem: Production



Delivery: Process of transferring the completed aircraft to the customer

- This phase includes logistics planning, coordinating transportation, and ensuring proper documentation and handover to the customer.



Completions: Finalization of the aircraft's interior, including installation of cabin furnishings, seating, in-flight entertainment systems, and other customer-specific features.

- This phase includes customizing the aircraft to meet the customer's preferences and requirements.



Assembly: Process of physically integrating various components and systems to build the complete aircraft.

- This phase includes structural assembly, installation of systems, wiring, and integration of avionics and other onboard equipment.

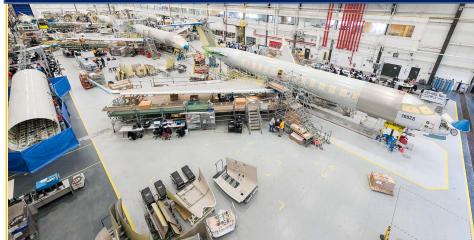
Bombardier Production Sites

St-Laurent Manufacturing Centre, Quebec



Cockpit Global & Challenger panels, riveting

Toronto, Ontario



Global final assembly line

Laurent-Beaudoin Completion Centre, Dorval, Quebec



Global completion and delivery

Challenger, Dorval, Quebec



Challenger final assembly, completion, and delivery

Wichita, Kansas



Defense / Missionized Aircraft

Red Oak, Texas



Global 7500 wing assembly

Querétaro, Mexico



AFT Fuse, Capsule nose, Doors, Slats, Cockpit subs. Verti bucket, Saddle Tank, Rudder, Flaps, Ailerons,

Los Angeles, California



Bearings, Motors, Couplings, Screws



Aerospace Ecosystem: Service & Aftermarket



Service Center

- **Crew Training:** Providing comprehensive training for pilots, cabin crew, and ground staff.
- **Customer Support:** Assisting customers with inquiries, technical issues, and maintenance coordination.
- **Operational Performance:** Optimizing aircraft efficiency and reliability during operations.
- **Fleet Enhancement:** Upgrading and modifying existing aircraft fleets for improved performance.



Sales & Marketing

- **Sales:** Promoting and selling aerospace products to potential customers.
- **Customer Service:** Addressing customer concerns and providing assistance.
- **Marketing:** Creating strategies to promote aerospace products effectively.



Aerospace Ecosystem: Supply Chain



Procurement refers to the act of obtaining or buying goods and services, including preparation and processing of a demand as well as the end receipt and approval of payment.



Logistics refers to activities related to the flow of materials for production, including planning, purchasing and inventory management.



Supply Chain is a network between a company and its suppliers to produce and distribute a specific product to the final buyer.



Parts & Assemblies: Sourcing and managing the supply of components for aerospace manufacturing.



Warehousing: Managing inventory and storage of aerospace parts and components.



Transportation: Coordinating the movement of parts and assemblies within the supply chain.



Increasingly Complex Aerospace Supply Chain





Trends Impacting Canadian Aerospace Industry

Digital Transformation and Connectivity

Use of advanced data analytics, Internet of Things (IoT), and cloud-based solutions to optimize operations, enhance maintenance, and improve customer experiences



Advanced Manufacturing & Automation

Adoption of advanced manufacturing technologies as 3D printing and robotics to help streamline production processes, improve efficiency, and reduce costs



Sustainable Aviation

Focus on developing and adopting greener technologies to reduce carbon emissions and environmental impact





Trends Impacting Canadian Aerospace Industry



Workforce Development

Need for skilled talent through workforce development initiatives such as partnerships between industry, academia, and government to provide training programs, internships, and educational opportunities



On-the-Job Training / Opportunities



Electric Installer



Logistics Agent



Avionics Technician



Quality Analyst



Methods Agent



Aircraft Assembler



Aircraft Mechanic



Data Analyst



THANK YOU

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